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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/674,665	05/14/2001	Mordechai Segal	TI-30245	1323

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TEXAS INSTRUMENTS INCORPORATED
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EXAMINER

LUGO, DAVID B

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.	Applicant(s)	
09/674,665	SEGAL ET AL.	
Examiner	Art Unit	
David B. Lugo	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 2/6/07 have been fully considered but they are not persuasive.

Regarding claims 23 and 27, Applicant states that the combination of the Benelli and Beyers references is improper. The Examiner respectfully disagrees.

Applicant has stated that the Benelli publication does not disclose use of diversity in communicating a data signal using a cable television medium, and that Beyers teaches away from the combination. However, it is noted that the Beyers reference is used as the primary reference in the rejection of claims 23-30, not the Benelli publication, and it is Beyers that discloses the use of diversity in communicating a data signal using a cable television medium (see col. 1, lines 28-36), where a transmitter will transmit the same data on a plurality of channels each time data is transmitted (col. 18, lines 4-13; col. 19, lines 6-8). Thus, Beyers establishes the use of diversity in communicating a data signal using a cable television medium where a single message is transmitted over distinct transmission channels. Beyers, however, does not expressly indicate that this is implemented using a 1:N rate encoder which reproduces an inputted signal N times. The Benelli reference explicitly describes a 1:N rate encoder that is used to provide N outputs from an input signal for transmission via distinct transmission channels. Thus, both the Beyers and the Benelli references disclose diversity transmission, and Benelli is merely used to show how one of ordinary skill in the art may implement the system of Beyers via a 1:N rate encoder. Accordingly, one of ordinary skill in the art would not lack motivation to combine the references since both references are in the same field of endeavor,

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namely diversity communication, and since the diversity techniques disclosed by Benelli are indicated as improving the performance of communication systems affected by noise.

Further regarding Applicant's contention that Beyers teaches away from the proposed combinations, it is noted that Beyers does not teach away from the combination because as indicated above, Beyers is used as the primary reference, and the teachings of Benelli which are combined with Beyers is the use of a 1:N rate encoder in a diversity system, not the fact that such diversity systems may be employed in spread spectrum systems. In addition, Beyers does not disparage use of such encoding techniques in the diversity system disclosed therein, and thus does not teach away from the proposed combination.

Regarding claim 23, Applicant further argues that the Examiner is using hindsight and is merely including references in an attempt to piece together Applicant's invention using the claims as a guide. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

The rejection of claims 23-30 is maintained, and is restated below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 23, 26, 27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beyers, II et al. U.S. Patent 5,235,619 in view of Benelli and Balachandran et al. U.S. Patent 6,778,558.

Regarding claims 23 and 27, Beyers discloses a communication arrangement for communicating data by employing diversity techniques using a cable transmission medium in a cable television system (col. 1, lines 28-36), where a transmitter will transmit the same data on a plurality of channels (col. 18, lines 4-13), and will transmit on a plurality of different channels each time data is transmitted (col. 19, lines 6-8). Beyers, however, does not expressly illustrate a 1:N rate encoder along with a transmission arrangement for implementing the diversity scheme of reproducing the symbol N times and transmitting each reproduced symbol using a distinct transmission channel. Benelli discloses such an arrangement in Figure 1 which shows a 1:N rate encoder (coder) coupled to an input data stream and configured to reproduce a symbol N times, and a transmission arrangement configured to use a plurality of outputs to transmit each symbol using a distinct channel (channels 1-m), where a receiver is coupled to the outputs of the transmission arrangement for combining the signals via a signal combiner to output an estimate of the symbol. It would have been obvious to one of ordinary skill in the art to use an arrangement as taught by Benelli to implement the diversity scheme of Beyers because using such an arrangement helps reduce bit error probability even when noise is significant and improves the performance of communication systems affected by noise, as stated by Benelli on page 1530, "Introduction," first paragraph.

Beyers in combination with Benelli, while showing a receiver for combining the received signals (see Benelli, Fig. 1), do not disclose that the receiver performs joint equalization and soft-combining. Balachandran discloses a receiver that combines multiple received copies of a data signal to increase the likelihood of correct decoding, which is described as soft combining of the signal (col. 1, lines 24-29). Accordingly, the combining of the signals disclosed by Beyers and Benelli is a soft combining. Balachandran further discloses jointly equalizing the received signal (col. 8, lines 17-31). It would have been obvious to one of ordinary skill in the art to perform joint equalization and soft combining of the received signal as disclosed by Balachandran in the system of Beyers and Benelli because joint equalization allows for the offsetting of severe ISI, as is well known in the art of communications.

Regarding claims 26 and 30, Beyers further discloses that Miller (delay) data encoding with BPSK modulation is used (col. 20, lines 66-68), where BPSK is a scheme where a plurality of information bits are used to represent a symbol.

4. Claims 24 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beyers, II et al. in view of Benelli and Balachandran et al. as applied to claims 23 and 27 above, and further in view of Kaewell, Jr. et al. U.S. Patent 5,402,451.

Regarding claims 24 and 28, Beyers in combination with Benelli and Balachandran disclose a communication arrangement employing soft combining, as described above, but do not expressly the type of soft-combining. Kaewell discloses a diversity combiner where soft-combining of the signals is performed using weighted combining (col. 2, lines 52-56). It would have been obvious to one of ordinary skill in the art to use the weighted soft-combining of signals as taught by Kaewell in the system of Beyers in combination with Benelli and

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Balachandran because such combining allows for the best set of diversity combining weights to be determined for different operating environments (col. 1, lines 51-53).

5. Claims 25 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beyers, II et al. in view of Benelli and Balachandran et al. as applied to claims 23 and 27 above, and further in view of Lathrop U.S. Patent 5,701,427.

Regarding claims 25 and 29, Beyers in combination with Benelli and Balachandran disclose a communication arrangement as described above, but do not expressly disclose transmitting an original message using one of the channels and performing retransmission using a remaining channel.

Lathrop discloses a communication arrangement where an information message is transmitted over a channel on a communications link 12, and a second retransmit channel is used to transmit retransmission information (col. 7, lines 22-33). It would have been obvious to one of ordinary skill in the art to use the teaching of Lathrop of a channel for retransmission that is separate from that used to transmit an original message in order to allow for retransmission of data not accurately received without interrupting the transmission of the original message.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

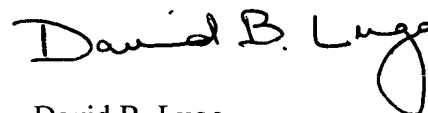
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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David B. Lugo whose telephone number is 571-272-3043. The examiner can normally be reached on M-F; 9:30-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



David B. Lugo
Patent Examiner

4/15/07